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REMARKS

Applicant acknowledges the Examiner's review of the specification, claims, and drawings. In light of the above amendments and following remarks, Applicant respectfully requests reconsideration of the present application. The amendments and remarks presented herein are fully supported by the application as originally filed. No new matter has been entered.

STATUS OF THE CLAIMS:

Claims 1-28 are pending in the application. Claims 1, 2, 9, 10, 17, and 18 have been amended. Favorable reconsideration and allowance of the subject application are respectfully requested in view of the following comments. Applicant respectfully notes that Claims 25-28, which were presented in the Preliminary Amendment have not been acknowledged or addressed on the merits.

With respect to the amendments, Claims 1, 9, and 17 have been amended to include the limitation defining the "highly reactive phenol resole resin", so that the resin is obtainable by reacting a substituted or unsubstituted phenol and an aldehyde in the presence of an alkaline catalyst at a temperature of no more than 65°C and then neutralising to a pH of 5.5 – 6.6. Claims 2, 10, and 18 have been amended to reflect that a reaction temperature of no more than 65°C is now required in Claims 1, 9, and 17, respectively.

More specifically, the resole resin, in each of Claims 1, 9, and 17, is no longer defined by the language:-

"capable of fully crosslinking at temperatures between 15°C and 25°C, optionally in the presence of up to ten times its own weight in water, and having, typically, a free phenol content of 12-15% (w/w)".

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Instead, the resole resin, in each of Claims 1, 9, and 17, is defined as being obtainable by the process of original claim 2 (the resin being obtainable by reacting a substituted or unsubstituted phenol and an aldehyde in the presence of an alkaline catalyst at a temperature of no more than 65°C), with the further restriction that the pH of neutralisation is now specified as 5.5 – 6.6. Support for this further amendment may be found at page 11, line 18. As such, no new matter has been added by way of these amendments.

Accordingly, allowance thereof is respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. § 102:

Claims 1-24 stand rejected as allegedly being anticipated under 35 U.S.C. 102(b) by Garrett (U.S.-A-4,067,829). Applicant respectfully traverses these rejections, in view of the amendments made herein and the comments set forth below.

Example 1 of Garrett discloses that the resole resin is prepared by reacting phenol and an aldehyde (formaldehyde) in the presence of an alkaline catalyst (sodium hydroxide) at 65°C, followed by neutralisation to a pH of about 7.0 (see column 6, lines 21-28 of Garrett). There is no disclosure or suggestion in Garrett that the reactivity of the resole resin can be altered by altering the neutralisation pH below the “about 7.0” disclosed in Garrett.

Applicant hereby provides technical data to be included in the file but not as part of the original application, showing the unexpected effect on reactivity of neutralisation to a pH of 5.5-6.6.

The phenolic resole resin in question was prepared using the general teaching at pages 10 and 11 of the U.S. application as originally filed. Specifically, 100 parts by weight of phenol was reacted with 116.5 parts by weight of 44% formaldehyde in the presence of 9.09 parts by weight of 25% sodium hydroxide solution. The mixture is then

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stirred and heated to a temperature of 60°C for a period of between 4 and 6 hours, until an intermediate viscosity of 13.5-14.5 centiStokes is reached at a temperature of 25°C. The mixture is then neutralised with *p*-toluenesulphonic acid to a desired pH (see below) (+/- 0.5). Most of the process and reaction water is then distilled off under vacuum to a water level of 4% (+/- 1%). The thus obtained rosole resin has a typical viscosity of 2000 – 3000 mPa at 25°C.

The reactivity test is the time taken (in minutes) for the catalysed resin to initiate exotherm, as evidenced by boiling and the onset of hardening. The reactivity test is carried out in the following manner. The resin is stabilised at 25°C. 50g of the resin is taken in a 200ml waxed paper cup. 0.5g of a catalyst comprising 85% xylene sulphonic acid / 15% *o*-phosphoric acid (sold by Borden Chemicals as Phencat 15) is added with intermediate mixing and a stop-clock is started. Mixing is continued for 20 seconds, after which the cup is left in a well-ventilated and temperature-controlled area. The stop-clock is stopped at the exotherm onset point and the time is recorded.

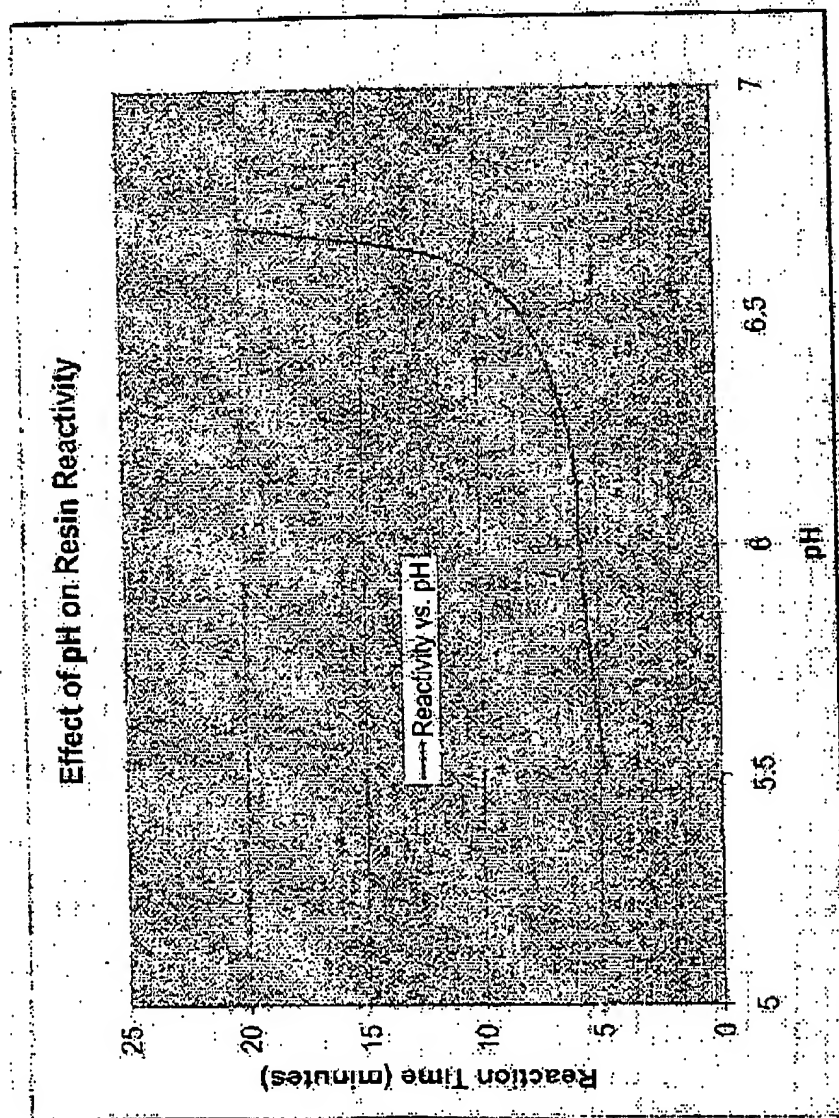
The reactivity data are displayed below in tabular form:-

pH	Reaction Time (Minutes)
5.5	4.75
5.9	5.6
6.3	6.33
6.6	10
6.7	20

The effect of neutralisation pH is also illustrated in the accompanying figure, using the same data. You will see that the reaction time deteriorates between pH 6.6 and pH 6.7. These data support a pH neutralisation range of 5.5-6.6 as now recited in the claims.

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These data demonstrate that controlling the reaction temperature to no more than 65°C and controlling the neutralisation pH to within 5.5 to 6.6 unexpectedly yields a highly reactive resin.



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As such, it is respectfully submitted that amended Claims 1, 9, and 17 are patentable over Garrett. All of the remaining claims directly or indirectly depend from Claims 1, 9, and 17. For at least the same reasons discussed above in connection with Claims 1, 9, and 17, it is respectfully submitted that all of the remaining claims are patentable over Garrett. Wherefore, none of the cited art, taken alone or together discloses or suggests the presently claimed invention. Accordingly, Applicant respectfully requests allowance of all the claims, namely Claims 1-28, and early passage to issue of the present application.

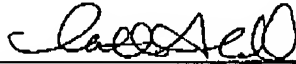
Should the Examiner have any questions or suggestions, he is invited to contact the undersigned at (616) 975-5506.

Respectfully submitted,

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